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24
25 **UNITED STATES DISTRICT COURT**
26 **NORTHERN DISTRICT OF CALIFORNIA**
27

28 UNITED STATES OF AMERICA

No. CR-17-0533 EMC

Plaintiff,

v.

RUSSELL TAYLOR OTT, et al

Defendants.

SUPPLEMENTAL MEMORANDUM IN
SUPPORT OF MOTION TO EXCLUDE OR
LIMIT THE TESTIMONY OF FBI ABOUT
CELL PHONE COMMUNICATIONS AND
LOCATIONS BASED ON HISTORICAL
CELL CALL DETAIL RECORDS AND
PROPRIETARY MAPPING SOFTWARE;
MOTION FOR EVIDENTIARY HEARING

Date: March 3, 2021

Time: 9:00 A.M.

Dept: The Honorable Edward M. Chen
District Court Judge

TO: THE UNITED STATES ATTORNEY FOR THE NORTHERN DISTRICT OF CALIFORNIA; ASSISTANT UNITED STATES ATTORNEYS KEVIN BARRY, AJAY KRISHNAMURTHY, LENA PENG; AND TO THE CLERK OF THE ABOVE-ENTITLED COURT:

INTRODUCTION

This pleading by defendants Ott and Diaz supplements the pleadings filed by defendant Wendt regarding a *Daubert* hearing as to the government's proposed expert testimony of FBI Special Agent Meredith Sparano as to CAST evidence in this case. [Dkt. Nos. 1444-1445]. The Wendt pleading is a comprehensive pleading. Here, defendants Ott and Diaz focus on one aspect of the proposed CAST analysis and testimony - cell tower/antenna information used as part of the CAST analysis - and stress the point of why an evidentiary hearing is necessary as to the Court's gatekeeper function as to the offered testimony.

The Court expressed a view at the recent January 13, 2021 hearing that CAST analysis and Cell Site Location Information (CSLI) is not “rocket science” and is a relatively simplistic matter of inputting component data - call detail records and cell tower information - into a mapping software program. The Court emphasized that such a process could potentially be replicated by a defense expert as to the results of such data input. The government favors the argument that generating CAST opinion testimony is merely a matter of “popping numbers into a program”.

Here, the defense challenges the perceived simplicity of the CAST process and resulting conclusions, particularly with respect to historical cell tower data, and how the subjective methodology in utilizing or not using objective components of the data can affect the reliability of the depictions, opinions, and conclusions as to that process. Radio frequency theory is the foundational science of the CAST process, and the offered reports and testimony of Special Agent Sparano unreliably distort conclusions that purportedly can be made from the underlying science. The Wendt brief addresses these general issues in argument 7 of its brief (pages 28-37), but this supplemental memo is intended to drill down further, and explain why a *Daubert* hearing is necessary to assess basic gatekeeping issues.

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1 maintenance issues and can be modified or improved for a carrier to maintain current standards
2 and compete with other carriers. The state of the capacities and components of the cell tower at
3 the actual time of the incident being investigated is what is important, and Agent Sparano has
4 not provided the specific details of the records she “popped” into the mapping system in 2018.
5

6 As to the input of the cell tower information for the analysis it is also important what
7 portions of the cell tower data are part of the input, and what, if any, portions of the available
8 objective data are left out of the process. For instance, as discussed below, Special Agent
9 Sparano did not use all objective and scientific significant data provided by AT&T, including
10 the height of the tower housing the antenna. All of this inputted information can affect the
11 approximations of a cell tower’s coverage area, and such approximations are handicapped
12 where, as in this case, there is no drive testing information.
13

14 Why this data is so important is featured in the Wendt brief, and in particular, the
15 reference to Aaron Blank’s article “The Limitations and Admissibility of Using Historical
16 Cellular Site Data to Track the Location of a Cellular Phone”, 18 RICH. J.L. & TECH. 3
17 (2011) (Exhibit B to Wendt brief) Blank explains the multiple technical issues that may affect
18 which cell sites are involved in the transmission of cell phone radio waves - either reception or
19 transmission: “First, the technical characteristics of cell sites may affect signal strength: (1) the
20 number of sites available; (2) maintenance or repairs being performed; (3) height of the cell
21 tower; (4) height above sea level; (5) wattage output; and (6) range of coverage. Second,
22 technical characteristics of the antennas on cellular sites may affect signal strength, such as the
23 number of antennas, the angle and direction the antenna is facing, height of each antenna, and
24 call traffic process through each antenna. Third, technical characteristics of the phone, such as
25 the wattage output and generation of the phone’s broadband capability, may affect signal
26 strength. Fourth, signal strength may depend upon environmental and geographical factors,
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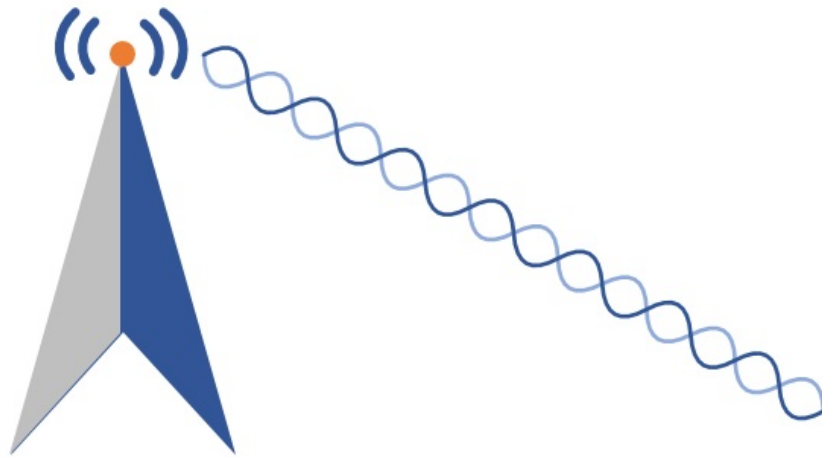
1 including the weather, topography, and level of urban development. Finally, indoor or outdoor
2 use of the phone may alter the strength of the signal.” [Citations and footnotes omitted]

3 The defense and government agree on one thing: the study of how radio waves move
4 from one antenna to another is science. What the parties disagree on is whether Agent Sparano
5 understands or applied the appropriate scientific standards in this case; in other words, whether
6 what she did is actually scientific and reliable.

7
8 Per Agent Sparano and the government, the applicability of radio frequency theory to
9 cell site location information involves only needing to know two pieces of information: (1) the
10 location of a cell site and (2) the direction it is pointing. And they say, this information is
11 provided directly by the phone companies in the form of Call Detail Records. There are many
12 reasons the Agent Sparano’s opinions are incomplete, inconsistent with the science, and
13 inconsistent with her own apparent reasoning. As such, a *Daubert* evidentiary hearing is
14 needed.

15
16 First, even under a very rudimentary understanding of the use of radio wave propagation
17 to determine the proximity of a receiving antenna, a scientist would consider the strength of the
18 transmitting signal, the height of the tower, the angle of the antenna, and the geography of the
19 area. Save for the height of the tower, which is discussed following, Agent Sparano does not
20 possess or consider any of the above information.

21
22 These omissions matter because height, angle, and power are three of the most
23 significant factors influencing radio wave propagation. The following example is illustrative.
24 In this example, the antenna is attached to a mast that is 500 feet off the ground. The antenna
25 is directed downward at an angle of 150 degrees:
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The purpose of the tower may be to service people not in the immediate area of the tower. Even if Agent Sparano had access to the power of the signal and the angle of the tower, she would not take this information into account, because instead, she would stick with her standard pie shape wedge that she inserts for every individual cell tower. This approach is misleading because it implies that each individual tower services the area directly in front of it, whereas it might service an area further away.

Second, Agent Sparano treats the height of all antennas the same, even though she has access to the actual height of the various towers. Even without knowing the angle or power, the height of the tower, which is a significant factor in radio wave propagation, is ignored by Agent Sparano in her analysis.

In other words, Agent Sparano both lacks all necessary objective data to conduct a scientific analysis and recklessly ignores significant objective data in reaching her opinions. But her opinions are also driven by subjective data that the government has yet to justify. For instance, the government has not explained why Agent Sparano treats each cell site as having a 120-degree beam width (the same pie-shaped wedge) and a coverage area of approximately

1 one mile. There is zero scientific basis to support the proposition that every cell site acts the
2 same way.

3 Moreover, and more troubling, is that even though Agent Sparano knows the bandwidth
4 of each antenna, (generally 60 degrees), she nonetheless treats each antenna as having a 120-
5 degree angle. This decision is likewise neither explained nor justified. This is significant
6 because Agent Sparano effectively increasing the size of a potential coverage area of a cell site.
7

8 In short, the use of radio waves to determine location is science, but Agent Sparano is
9 not using science in her assessment. Instead, she has made a series of unsupported assumptions
10 untethered to science and ignored data points that do not justify her opinions. Because the
11 government cannot establish her testimony is reliable, a *Daubert* evidentiary hearing should be
12 held, and ultimately her testimony should be excluded at a trial.
13
14

15 Respectfully submitted,

16
17 DATED: JANUARY 29, 2021

18 /s/
19 ROBERT WAGGENER
Attorney for Defendant Ott

20 DATED: JANUARY 29, 2021

21 /s/
22 MARCIA ANN MORRISSEY
Attorney for Defendant Ott

23 DATED: JANUARY 29, 2021

24 /s/
25 JAMES THOMSON
Attorney for Defendant Diaz
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